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EXAMINER	
SIM, YONG H	

ART UNIT	PAPER NUMBER
2629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/664,013	DIEFENBAUGH, PAUL S.	
	Examiner	Art Unit	
	YONG SIM	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *1/3/2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8 and 10-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 10-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/3/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 1/3/2008 have been fully considered but they are not persuasive.

With respect to claim 1, the Applicant's argues that Helms fails overcome the deficiencies of Nenonen to teach or suggest adjusting image brightness and corresponding backlight intensity based on an ambient light level.

However, Examiner respectfully asserts that Helms was introduced to overcome the deficiencies of Nenonen in view of Chang. Nenonen in view of Chang teach adjusting image brightness to compensate for backlight intensity that is reduced to operate the apparatus in a low power mode, but do not expressly disclose the ambient light detection. Thus, Helms was introduced to overcome the deficiency of ambient light detection. Helms expressly discloses ambient light detection and changing parameters to correspond to the change in ambient light conditions.

Therefore, Nenonen, Chang and Helms, as a whole, teach adjusting image brightness to compensate for backlight intensity that is reduced to operate the apparatus in a low power mode, wherein the image brightness is adjusted to compensate for the reduced backlight intensity based on an ambient light level.

With respect to Applicant's argument reciting the combination of Nenonen in view of Helms and Change fails to teach or suggest that the image brightness and pixel color intensity are adjusted to compensate for the reduced backlight intensity based on an ambient light level.

However, Examiner respectfully disagrees since when the image brightness is adjusted, the pixel color intensity would be adjusted as well. Applicant has failed to reveal in the specification a clear distinction between the image brightness and color intensity. Unless otherwise defined by the applicant, it is well known in the art that brightness and intensity are synonymous.

Therefore, the argument is moot and the previous rejections are maintained.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1.
2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. **Claims 1 – 8 and 10 – 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nenonen (US 6,148,103) in view of Chang et al. (Hereinafter "Chang" US 2006/0071899 A1) and further in view of Helms (US 5,760,760).**

Re claim 1, Nenonen teaches an apparatus comprising: a set of registers where each register has a corresponding computed brightness value to store data indicating a number of pixels of an image having respective computed brightness values [Col. 1, lines 15 – 16; "A histogram is the distribution of the brightness values of a picture, and the number of the brightness values are grouped into classes/each register." See fig. 1. The histogram is stored in "42, memory" (Fig. 5). It is inherent that the brightness values are stored in a set of registers in order to be grouped into classes in memory/registers.] each register having an associated saturation threshold value (Col. 2, lines 1 – 5; "a maximum amplification limit/threshold that must not be surpassed by the histogram peaks.");

and an image brightness agent (Col. 7, lines 29 – 34; "The system according to the invention can be realized in many different ways, for example by means of a custom designed application specific integrated circuit or in a programmed fashion.") communicatively coupled with the set of registers to determine whether a register is saturated and, and for each register that is saturated to redistribute computed brightness values to a closest non-saturated registers (Abstract, lines 10 – 15; "there

are cut off all values surpassing said limit/threshold value, which are then redistributed in the histogram, to classes nearest/closest register to the class under observation/saturated register.).

But does not expressly disclose adjusting image brightness to compensate for backlight intensity and pixel color intensity that is reduced to operate the apparatus in a low power mode.

However, Chang teaches an LCD wherein the power consumption of a liquid crystal panel is reduced by decreasing the backlight intensity of the end user terminal, and minimizes the change in the quality of the visual signal by adapting the brightness/pixel color intensity or contrast of the visual signals based on backlight intensity (Chang: Para 0015).

Therefore, taking the combined teachings of Nenonen and Chang, as a whole, it would have been obvious to a person having ordinary skill in the art to incorporate the idea of decreasing backlight intensity and adjusting the video signal based on the backlight intensity as taught by Chang into the apparatus of Nenonen to obtain an apparatus with a look-up table that contains certain computed brightness values to be redistributed based on a register saturation wherein the backlight intensity is decreased to reduce power consumption and the visual signal is changed based on the reduced backlight intensity to minimize the change in the quality of the visual signal (Chang: Para 0014 - 15).

The combined teachings of Nenonen and Chang teach the apparatus with a look-up table that contains certain computed brightness values to be redistributed based on

a register saturation wherein the backlight intensity is decreased to reduce power consumption and the visual signal is changed based on the reduced backlight intensity

But does not expressly disclose adjusting image brightness/pixel color intensity and corresponding backlight intensity based on an ambient light level.

However, Helms further teaches an apparatus wherein a look-up table/image brightness is modified based on the input ambient light value/brightness value, and the backlight that is modified based on the modification of the lookup table (Helms: Col. 3, line 60 – Col 4, line 5).

Therefore, taking the combined teachings of Nenonen, Chang and Helms, as a whole, it would have been obvious to a person having ordinary skill in the art to incorporate the idea of modifying a look-up table backlight based on the input ambient light as taught by Helms into the apparatus as taught by Nenonen and Chang to obtain an apparatus with a look-up table that contains certain computed brightness values to be redistributed based on a register saturation wherein the backlight intensity is decreased to reduce power consumption and the visual signal is changed based on the reduced backlight intensity which is quickly and accurately modified based on the change in the ambient lighting conditions of the environment in which the LCD is being operated for optimal power consumption. (Helms: Abstract).

Re claim 2, the modified teachings of Nenonen, Chang and Helms teach the apparatus of claim 1, but fail to expressly teach the color look-up table that modifies based on the computed brightness values.

However, Helms further teaches a look-up table that modifies based on the input ambient light value/brightness value. (Helms: Col. 3, lines 60 – 65).

Therefore, taking the combined teachings of Nenonen, Chang and Helms, as a whole, it would have been obvious to a person having ordinary skill in the art to incorporate the look-up table as taught by Helms into the apparatus of claim 1 as taught by the modified teachings of Nenonen, Chang and Helms to obtain an apparatus with a look-up table that contains certain computed brightness values which quickly and accurately modifies the brightness of an LCD based on the ambient lighting conditions of the environment in which the LCD is being operated. (Helms: Abstract).

Re claim 3, the modified teaching of Nenonen, Chang and Helms teach the apparatus of claim 2 wherein the registers store brightness histogram values (Nenonen: Col. 1, lines 15 – 16; "A histogram is the distribution of the brightness values of a picture, and the number of the brightness values are grouped into classes." The histogram is stored in "42, memory" (Nenonen: Fig. 5). It is inherent that the brightness values are stored in a set of registers in order to be grouped into classes in memory/registers.)

Re claim 4, the modified teachings of Nenonen, Chang and Helms teach the apparatus of claim 2, providing a displayed image that is comparable in user-perceived brightness to an original image in a normal power mode (Chang: Para 0017; "the power consumption of the end user terminal is reduced, and the user can hardly recognize the

difference in the video quality because the brightness of the visual signals is increased, even if the backlight intensity is decreased.")..

But the teachings as discussed in claim 2 fail to further describe the apparatus comprising a backlight control agent communicatively coupled with the image brightness agent, the backlight control agent to modify backlight brightness based on modifications to the color look-up table.

However, Helms further teaches an apparatus wherein the backlight is modified based on the modification of the lookup table (Helms: Col. 3, line 60 – Col 4, line 5. As for the backlight control agent, the means for controlling or modifying is required to modify the backlight.).

Therefore, taking the combined teachings of Nenonen, Chang and Helms, as a whole, it would have been obvious to a person having ordinary skill in the art to incorporate the backlight brightness modification as taught by Helms into the apparatus of claim 2 as taught by the modified teachings of Nenonen, Chang and Helms to obtain an apparatus with a look-up table that contains certain computed brightness values which quickly and accurately modifies the brightness of an LCD based on the ambient lighting conditions of the environment in which the LCD is being operated. (Helms: Abstract).

Re claim 5, the modified teachings of Nenonen, Chang and Helms teach the apparatus of claim 1, wherein one or more of the saturation threshold values (Nenonen:

"Cut-out values," Col. 2, line 5) comprises a largest number (Nenonen: "peak values," Col. 2, line 3) to be stored by the associated register.

Re claim 6, the modified teachings of Nenonen, Chang and Helms teach the apparatus of claim 1, but fails to explicitly teach the saturation threshold values comprising number less than a largest number to be stored by the associated register.

However, Nenonen teaches moving the values that are above the threshold value, which suggests that the threshold value should be equal to or less than the largest number to be stored.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the saturation threshold values comprising number less than an largest number to be stored by the associated register to optimally distribute the values among registers.

Re claim 7, the modified teachings of Nenonen, Chang and Helms teach the apparatus of claim 1 wherein the image brightness agent comprises a processor (Nenonen: Col. 7, lines 29 – 33; "The system according to the invention can be realized in many different ways, for example by means of a digital signal processor.") executing sequences of instructions (Fig. 3).

Re claim 8, the modified teachings of Nenonen, Chang and Helms teach the apparatus of claim 1 wherein the image brightness agent comprises control circuitry

(Nenonen: Col. 7, lines 29 – 33; "by means of a custom designed application specific integrated circuit.") communicatively coupled with the set of registers.

Re claim 10, the modified teachings of Nenonen, Chang and Helms teaches the apparatus of claim 1, but fails to further described the apparatus comprising an ambient light sensor coupled with the image brightness agent to generate an indication of ambient light level.

However, Helms further teaches an apparatus wherein a photodetector is located proximate the front of the LCD to generate brightness control circuitry signal indicative of ambient lighting conditions (Helms: Abstract).

Therefore, taking the combined teachings of Nenonen, Chang and Helms, as a whole, it would have been obvious to a person having ordinary skill in the art to incorporate the photodetector as taught by Helms into the apparatus of claim 9 as taught by the modified teachings of Nenonen, Chang and Helms to obtain an apparatus with computed brightness values which automatically adjusts the brightness of an LCD based on the ambient lighting conditions of the environment, where the LCD is being operated, by modifying the backlight brightness according to the look-up table to increase battery run-time. (Helms: Abstract, Col. 2, lines 39 - 42).

Re claim 11, the modified teachings of Nenonen, Chang and Helms teach the apparatus of claim 1, but fail to disclose the image brightness agent that modifies a color look-up table based on the indication of ambient light level.

However, Helms further teaches an apparatus wherein a color look-up table is modified based on the indication of ambient light level (Helms: Col. 3, lines 51 – 65).

Therefore, taking the combined teachings of Nenonen, Chang and Helms, as a whole, it would have been obvious to a person having ordinary skill in the art to incorporate the photodetector as taught by Helms into the apparatus of claim 9 as taught by the modified teachings of Nenonen, Chang and Helms to obtain an apparatus with a photodetector that computes brightness values to automatically adjust the brightness of an LCD based on the ambient lighting conditions of the environment, where the LCD is being operated, to modify the backlight brightness according to the look-up table to increase battery run-time. (Helms: Abstract, Col. 2, lines 39 - 42).

The limitations of claim 12 are substantially similar to the limitations of claim 4. Therefore it has been analyzed and rejected similar to the rejection of claim 4.

Re claim 13, Nenonen teaches a method comprising:

configuring a plurality of registers to accumulate pixel data in an image corresponding to a specific computed brightness value associated with the respective registers values [Col. 1, lines 15 – 16; "A histogram is the distribution of the brightness values of a picture, and the number of the brightness values are grouped into classes/each register." See fig. 1. The histogram is stored in "42, memory" (Fig. 5). It is inherent that the brightness values are stored in a set of registers in order to be grouped into classes in memory/registers.];

processing pixels of an image to determine a specific computed brightness value of each pixel (Col. 4, lines 21 – 22; "in the gathering of histograms/computed brightness value, it is possible to observe all pixels in the picture area in question.");

incrementing a value stored in a register accumulating pixel data corresponding to a specific computed brightness value when a pixel having a specific computer brightness value is processed (Col. 5, lines 31 – 35; "in a preferred embodiment of the invention, these peaks occurring after the first expansion are cut off and distributed/incremented evenly to all classes.") ;

redistribute a subset of computed brightness values corresponding to one or more registers if the computed brightness value for the register exceeds a threshold value registers (Abstract, lines 10 – 15; "there are cut off all values surpassing said limit/threshold value, which are then redistributed in the histogram, to classes nearest/closest register to the class under observation/saturated register.)..

But does not expressly disclose adjusting image brightness and modifying pixel color intensity values corresponding to one portion of the image to be displayed based on to compensate for backlight intensity that is reduced to operate the apparatus in a low power mode.

However, Chang teaches an LCD wherein the power consumption of a liquid crystal panel is reduced by decreasing the backlight intensity of the end user terminal, and minimizes the change in the quality of the visual signal by adapting the brightness/pixel color intensity or contrast of the visual signals based on backlight intensity (Chang: Para 0015).

Therefore, taking the combined teachings of Nenonen and Chang, as a whole, it would have been obvious to a person having ordinary skill in the art to incorporate the idea of decreasing backlight intensity and adjusting the video signal based on the backlight intensity as taught by Chang into the method of Nenonen to obtain method of configuring a plurality of registers wherein the registers contain certain computed brightness values to be redistributed based on a register saturation wherein the backlight intensity is decreased to reduce power consumption and the visual signal is changed based on the reduced backlight intensity to minimize the change in the quality of the visual signal (Chang: Para 0014 - 15).

The combined teachings of Nenonen and Chang teach the article with resisters that contain certain computed brightness values to be redistributed based on a register saturation wherein the backlight intensity is decreased to reduce power consumption and the visual signal is changed based on the reduced backlight intensity

But does not expressly disclose adjusting image brightness/pixel color intensity values and corresponding backlight intensity based on an ambient light level.

However, Helms further teaches an apparatus wherein a look-up table/image brightness is modified based on the input ambient light value/brightness value, and the backlight that is modified based on the modification of the lookup table (Helms: Col. 3, line 60 – Col 4, line 5).

Therefore, taking the combined teachings of Nenonen, Chang and Helms, as a whole, it would have been obvious to a person having ordinary skill in the art to incorporate the idea of modifying a look-up table backlight based on the input ambient

light as taught by Helms into the method as taught by Nenonen and Chang to obtain a method of configuring a plurality of registers wherein registers contain certain computed brightness values to be redistributed based on a register saturation wherein the backlight intensity is decreased to reduce power consumption and the visual signal is changed based on the reduced backlight intensity which is quickly and accurately modified based on the change in the ambient lighting conditions of the environment in which the LCD is being operated for optimal power consumption. (Helms: Abstract).

The limitations of claim 14 are substantially similar to the limitations of claim 2. Therefore it has been analyzed and rejected similar to the rejection of claim 2.

The limitations of claim 15 are substantially similar to the limitations of claim 4. Therefore it has been analyzed and rejected similar to the rejection of claim 4.

The limitations of claim 16 are substantially similar to the limitations of claim 3. Therefore it has been analyzed and rejected similar to the rejection of claim 3.

The limitations of claim 17 are substantially similar to the limitations of claim 5. Therefore it has been analyzed and rejected similar to the rejection of claim 5.

The limitations of claim 18 are substantially similar to the limitations of claim 6. Therefore it has been analyzed and rejected similar to the rejection of claim 6.

The limitations of claim 19 are substantially similar to the limitations of claims 4, 10 - 12. Therefore it has been analyzed and rejected similar to the rejection of claims 4, 10 – 12.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YONG SIM whose telephone number is (571)270-1189. The examiner can normally be reached on Monday - Friday (Alternate Fridays off) 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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